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10/781,371	02/17/2004	Chee Siong Lee	42P18828	2794

8791 7590 07/27/2007  
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EXAMINER
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UNELUS, ERNEST

ART UNIT	PAPER NUMBER
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2181

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07/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/781,371	Applicant(s) LEE ET AL.	
	Examiner Ernest Unelus	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address.

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152..

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**  
**RESPONSE TO AMENDMENT**

**Claim rejections based on prior art**

1. Applicant's arguments filed 04/26/2007 with respect to claims 1-26 have been fully considered but are moot in view of the new ground(s) of rejection.

The rejection(s) of claim(s) 1-26 under Bernasconi et al. (US pat. 6,158,018) have been fully considered and is not persuasive. However, base on the amendment, the rejection has been withdrawn. Therefore, upon further consideration, a new ground(s) of rejection is made in view of Bernasconi et al. (US pat. 6,158,018) and Ivanov et al. (US pub. 2005/0015760).

The instant application having Application No. 10/781,371 has a total of 26 preliminary amended claims pending in the application; there are 4 independent claims and 22 dependent claims, all of which are ready for examination by the examiner.

**The applicant's response in regards to the double patenting rejection has been acknowledged.**

**I. INFORMATION CONCERNING OATH/DECLARATION**

**Oath/Declaration**

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

**II. INFORMATION CONCERNING DRAWINGS**

**Drawings**

3. The applicant's drawings submitted are acceptable for examination purposes.

### **III. REJECTIONS BASED ON PRIOR ART**

#### **Double Patenting**

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

- 4a. **Claims 1 and 2** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 16 of copending Application No. 10/781,512 in view Bernasconi et al. (US pat. 6,158,018).

4b. Initially, it should be noted that the present application and Application No. 10/781,512, share one common inventor, which is Chee Lee. The assignee for both applications is INTEL CORPORATION. The examiner also notes that neither the instant application nor U.S application 10/781,512 were the subject of a restriction by the office.

4c. Claimed subject matter in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common

subject matter, as noted below. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993).

4d. Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See MPEP § 804.

4e. Claim 1 is compared to claims 16 of application 10/781,512 in the following table:

Instant Application	Application 10/781,512
<p>(Currently Amended) A system comprising:</p> <p>trigger-matching logic to capture an incoming read/write request cycle from an upstream device and to determine if the captured incoming read/write request cycle matches at least one trigger condition of one or more of trigger conditions;</p> <p>and a control logic coupled to the trigger-matching logic to select a set of instructions upon detection of at least one matched trigger condition and to execute operations as specified by the selected set of instructions <b>to modify the captured incoming read/write request cycle prior to transmission to a downstream destination device,</b></p> <p>wherein the set of instructions is selected based on the at least one matched trigger condition.</p>	<p>A patch module comprising:</p> <p>a trigger-matching logic to capture an incoming cycle and determine if the captured incoming request cycle matches one or more of trigger conditions;</p> <p>and a control logic coupled to the trigger-matching logic to select a set of instructions upon detection of at least one matched trigger condition and to execute operations as specified by the selected set of instructions,</p> <p>wherein if the captured request cycle that caused a trigger is a non-posted cycle, the control logic instructs a completion queue to load the completion queue with one of the following (1) unmodified header information from the captured non-posted cycle, (2) modified header information associated with modified non-posted cycle, or (3) header information associated with a new cycle generated in response the captured request cycle, wherein the control logic instructs the completion</p>

	queue whether or not to return a completion packet if the completion queue is loaded with header information from one of the modified non-posted request cycle and the generated, new request cycle to the requesting device.
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**In regards to “wherein the set of instructions is selected based on the at least one matched trigger condition” This part of the limitation is disclosing that the control logic will select a set of instruction upon detection of one matched trigger condition. This limitation has already been discloses as part of the claim; for example “a control logic coupled to the trigger-matching logic to select a set of instructions upon detection of at least one matched trigger condition.**

**This a provisional double patenting rejection since the conflicting claims have not yet been patented. The double patenting rejection is also applicable to other claim in the application; claim 2 of the instant application corresponds to claim 17 of Application 10/781,512.**

Claim 16 from application number 10/781,512 didn't specifically discloses “to modify the captured incoming request cycle prior to transmission to a downstream destination device,”

Bernasconi teaches “to modify the captured incoming request cycle prior to transmission to a downstream destination device, (See col. 6, lines 46-47, which discloses “and at that point, a branch to corrected DSP program software in section 20b is performed”. Col. 6, lines 27-33 also discloses “After the corrected DSP program software from section 20b is delivered to the DSP 16 over bus 28, the patching circuitry 22, and bus 30, a program op code causes a jump back from the end of the block of corrected DSP program software in section 20b of

**the RAM 20 to the remainder of good DSP program software in section 18c of the ROM 18”)**

Application number 10/781,512 and Bernasconi’s invention are analogous art because they are from the same field of endeavor of a patching circuitry to bypass or fix a flaw.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch module to process non-posted request cycles and to control completions returned to requesting device as taught by application number 10/781,512 and an improved IC device including patching circuitry to bypass flawed data stored in an embedded ROM and a method of operation therefore as taught by Bernasconi

The motivation for doing so would have been because Bernasconi teaches that **[“Moreover, the invention here permits as many corrections to the DSP program software as there are flaws in the IC's ROM 18, and quite importantly, these corrections to the software can be implemented in a final production device 12 with internal flaws in its embedded ROM 18, thereby obviating the need to design and manufacture a new chip”(col. 9, lines 43-48)].**

Therefore, it would have been obvious to combine Bernasconi and Application number 10/781,512 for the benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claim 1.

**Claim Rejections - 35 USC § 102**

4f. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-26**, are rejected under 35 U.S.C. 102(e) as being anticipated by Derr (US 2004/0128590).

6. As per **claim 1, 7, and 21**, Derr discloses, “a system comprising:

trigger-matching logic (**trigger-matching logic 102 of fig. 1, as discloses in para. 0016**) to capture an incoming read/write request cycle from an upstream device and to determine if the captured incoming read/write request cycle matches at least one trigger condition of one or more of trigger conditions (**see paragraphs 0016 and 0017, which also discloses “Trigger-matching logic 102 samples incoming cycles 110 and compares them with information stored in trigger registers 112”**); and

a control logic (**control logic 106 of fig. 1**) coupled to the trigger-matching logic to select a set of instructions upon detection of the at least one matched trigger condition and to execute operations as specified by the selected set of instructions to modify the captured incoming read/write request cycle prior to transmission to a downstream destination device (**see para. 0037, which discloses “If the trigger-matching logic indicates that the cycle presented matches a set of trigger register bits, the control logic takes over processing the incoming cycle”. See para. 0039, which discloses the instruction upon a detection**), wherein the set of instructions is selected based on the at least one matched trigger condition (**. See para. 0039**) and the upstream device (**the host interface unit, as discloses in para. 16**) is different from the



downstream destination device (See **fig. 1**, which disclose the incoming request from a host interface, as discloses in **para. 0016**, to an end device. See **para. 0002** for further detail).

7. As per **claim 2**, Derr discloses “the system of claim 1,”[see rejection to claim 1 above] “wherein the trigger-matching logic and the control logic are incorporated within an Input/Output (I/O) chip (see **chipset 206** of **fig. 2A**. See **para. 0024** for further detail).

8. As per **claim 3**, Derr discloses, wherein the control logic can execute an operation which involves logically combining a selected operand entry with a selected register containing, information from the captured cycle (see **para. 0037**).

9. As per **claim 4**, Derr discloses, wherein the control logic can execute an operation which causes a new cycle to be created and forwarded to a downstream bus of the I/O controller (see **para. 0021**)

10. As per **claim 5**, Derr discloses, wherein the control logic can execute an operation which involves modifying the captured incoming read/write request cycle (see **para. 0037**).

11. As per **claim 6**, Derr discloses, wherein the control logic can execute an operation which causes a timed delay or a conditional delay to be inserted (see **para. 0037**).

12. As per **claim 8**, Derr discloses, wherein the incoming read/write request cycle is received within an I/O controller chip (see **I/O controller chip 214 of fig. 2B. See para. 0025 for further detail**).

13. As per **claim 9**, Derr discloses, wherein executing of the instructions comprises: logically combining a selected operand entry with a selected register containing information captured from the received read/write request cycle (see **para. 0037**).

14. As per **claims 10 and 22**, Derr discloses, wherein executing the instructions comprises: generating a new read/write request cycle and forwarding the new read/write request cycle to a downstream bus of the I/O controller chip (see **para. 0037 and fig. 2B**).

15. As per **claims 11 and 23**, Derr discloses, wherein executing the instructions comprises: modifying a cycle type section of the incoming read/write request cycle (see **para. 0037**).

16. As per **claims 12 and 24**, Derr discloses, wherein executing the instructions comprises: modifying an address section of the incoming read/write request cycle (see **para. 0022**).

17. As per **claims 13 and 25**, Derr discloses, wherein executing the instructions comprises: modifying a data section of the incoming read/write request cycle (see **para. 0022**).

18. As per **claims 14 and 26**, Derr discloses, wherein executing the instructions comprises:  
inserting a timed delay or a conditional delay (**see para. 0023**).

19. As per **claim 15**, Derr discloses, wherein A patch module comprising:

a cycle capture unit to capture read/write request cycles forwarded by a processor as an upstream device (**see para. 0024**);

a plurality of trigger registers to store trigger conditions (**see para. 0024, which discloses “FIG. 2(a) illustrates a diagram of an exemplary system 200 implementing one embodiment of patch device 202. The system includes processor 204 and chipset 206. The system also includes memory 208 that is also coupled to chipset 206. Chipset 206 includes patch device 202. As noted above, trigger-matching logic samples incoming cycles and compares them with information stored in trigger registers”**);

a trigger comparator coupled between the cycle capture unit and the trigger registers to determine if information associated with the captured read/write request cycle matches at least one trigger condition of the trigger conditions stored in the trigger registers (**see para. 0016**);

an instruction storage to store instructions (**patch buffer 104 of fig. 1, as disclose in para. 0023**);

an instruction select unit to select a set of instructions from the instruction storage based on the at least one matched trigger condition (**See para. 0027**);

an instruction execution unit to execute the set of instructions selected by the instruction select unit to modify the captured incoming read/write request cycle prior to transmission to a

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downstream destination device (see para. 0037, which discloses “If the trigger-matching logic indicates that the cycle presented matches a set of trigger register bits, the control logic takes over processing the incoming cycle”. See para. 0039, which discloses the instruction upon a detection), wherein the upstream device (the host interface unit, as discloses in para. 16) is different from the downstream destination device (See fig. 1, which disclose the incoming request from a host interface, as discloses in para. 0016, to an end device. See para. 0002 for further detail).

20. As per claim 16, Derr discloses “the model of claim 15,”[see rejection to claim 15 above] “wherein the patch module is embedded within an I/O controller chip and can be programmed by a user to workaround conditions and defects existing in the I/O controller chip (see para. 0038 and fig. 2B).

21. As per claim 17, Derr discloses wherein the instruction execution unit can execute an instruction that comprises: a first field to specify a type of operation to be performed, wherein the type of operations identified by the first field includes (1) timed delay operation, (2) conditional delay operation, (3) generating new cycle operation, and (4) modifying the capture request cycle operation; and a second field to specify whether or not a cycle generated by the instruction is to be forwarded to downstream bus (see para. 0037).

22. As per **claim 18**, Derr discloses the instruction execution unit can execute an instruction that comprises: a third field to select a register to modify; a fourth field to select an operand entry from an operand array; and a fifth field to select a logic gate for combining the selected register with the selected operand entry (see para. 0037).

23. As per **claim 19**, Derr discloses wherein the captured incoming read/write request cycle is a non-posted cycle (see para. 0016 and fig. 1, which disclose an incoming request that has not been process or complete. The applicant discloses that 'non-posted cycle' is request that require completion).

24. As per **claim 20**, Derr discloses wherein the instruction execution unit can execute an instruction that comprises: a fifth field to specify whether a completion queue is to be loaded with unmodified header information from the captured non-posted cycle or loaded with modified header information associated with modified request cycle that is generated by the control logic (see para. 0022); and a sixth field to specify whether or not a completion associated with the captured read/write request cycle is to be discarded (see para. 0021).

**Claim Rejections - 35 USC § 103**

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. **Claims 1-19, and 21-26**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernasconi et al. (US pat. 6,158,018) in view of Ivanov et al. (US pat. 2005/0015760).

27. As per **claim 1**, Bernasconi discloses a system comprising:

trigger-matching logic (**the comparator 42 of the patching circuitry 22, as discloses in col. 7, lines 16-19) (col. 9, lines 51-57, teaches that the trigger-matching logic is the logic that doest the matching between the current DSP program address and a break address correspond to a flawed DSP program stored in the ROM 18, such as at section 18b) to capture an incoming read/write request cycle (the DSP program address, as discloses in col. 9, line 54) from an upstream device (directionally, fig. 1 shows the DSP program address coming from the DSP 16) and to determine if the captured incoming read/write request cycle matches at least one trigger condition of one or more trigger condition of one or more of trigger conditions (see col. 9, lines 51-57); and**

**control logic (the patch control 60 of the patching circuitry 22, as discloses in col. 7, lines 44 and 45. See also col. 8, lines 4-7) coupled (see fig. 3, which shows the comparator 42, the trigger-matching logic, being coupled to the patch control 60) to the trigger-matching logic to select a set of instructions upon detection of at least one matched trigger condition and to execute operations as specified by the selected set of instructions to modify the captured incoming request cycle prior to transmission to a downstream destination device (directionally, fig. 1 shows the DSP program address going to the DSP 16. Col. 8, lines 3-11 discloses “When the patch control module 60 is enabled over line 64, and the comparator 42 detects a match, the signal indicating a match over line 62 causes the patch control module 60 to**

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initiate a patch sequence. Initiation of a patch sequence will render appropriate signals over the patch control outputs labelled patch.cycle 1 on line 74 and patch.cycle 2 on line 76. Details of patch sequence initiation will be discussed later with respect to device operation". This 'Operation', as sated in col. 9, line 57 to col. 10, line 5, discloses "At this stage, the patching circuitry 22 sends to the DSP 16 a branch op code followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b thereof. Therefore, in the third general phase of device operation, the DSP 16 fetches corrected DSP program software instructions from the RAM 20 such as section 20b thereof. Moreover, corrected DSP program software can be set up to cause the DSP 16 to establish new break and branch addresses, thereby setting up additional patches to be executed during the operation of the device's DSP 16. Also, a section of corrected DSP program software typically includes, at the end thereof, jumping instructions causing the DSP 16 to recommence fetching DSP program software from the ROM 18 in a section such as 18c located downstream of the previous flawed portion 18b in the ROM 18"), wherein the set of instructions is selected based on the at least one matched trigger condition" (see col. 9, line 54 to col. 10, line 5).

but fails to disclose expressly wherein the upstream device is different from the downstream destination device.

Ivanov discloses wherein the upstream device (Client 108 of fig. 2, as discloses in para. 0033) is different from the downstream destination device (Distribution 102 of fig. 2) (see para. 0033, which discloses "If the bit pattern of the binary signature is found in a binary file

**208, scan-patch module 204 operates to fix the security vulnerability in the binary file 208 by installing a corresponding security patch on client computer 108”).**

Bernasconi et al. (US pat. 6,158,018) and Ivanov et al. (US pat. 2005/0015760) are analogous art because they are from the same field of data patching.

at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as described by Bernasconi and a systems and methods that enable patching of security vulnerabilities in binary files as taught by Ivanov.

The motivation for doing so would have been because Ivanov teaches that (“**The detection and patching of vulnerable binary files is automatic, reliable, regression free, and comprehensive across networks on an unlimited scale. These advantages can be realized in various ways including, for example, by leveraging current anti-virus infrastructure that is widely deployed across the Internet. A divergence of security patches away from conventional service packs provides for the possibility of production of regression-free fixes for security vulnerabilities in binary files**”; see para. 0020).

Therefore, it would have been obvious to combine Ivanov et al. (US pat. 2005/0015760) with Bernasconi et al. (US pat. 6,158,018) for the benefit of creating the system to obtain the invention as specified in claim 1.

28. As per **claim 2**, the combination of Bernasconi and Ivanov discloses “the system of claim 1,”[see rejection to claim 1 above], Bernasconi further discloses wherein the trigger-matching logic and the control logic are incorporated within an Input/Output (I/O) chip (**with respect to**



**this limitation, Bernasconi discloses the logic that does the matching between the current DSP program address and a break address take place inside the patching circuitry 22 that is disclosed in fig. 2. The patching circuitry 22 is shown in fig. 1 coupled to a control logic, incorporated within an Input/output (I/O) integrated circuit chip” (see fig. 1).**

29. As per **claim 3**, the combination of Bernasconi and Ivanov discloses “the system of claim 1,”[see rejection to claim 1 above], Bernasconi further discloses wherein the control logic can execute an operation which involves logically combining a selected operand entry with a selected register containing information from the captured cycle (see col. 3, lines 32-45, also, in fig. 3, Bernasconi also discloses the selected captured cycle’s information is stored within a register that is now shown, as disclosed by Bernasconi in col. 8, lines 18-26).

30. As per **claims 4, 10, and 22**, the combination of Bernasconi and Ivanov discloses “the system of claim 2,”[see rejection to claim 2 above], Bernasconi further discloses wherein the control logic can execute an operation which causes a new read/write request cycle to be created and forwarded to a downstream bus of the I/O controller (see col. 3, lines 47-64).

31. As per **claim 5**, the combination of Bernasconi and Ivanov discloses “the system of claim 1,”[see rejection to claim 1 above], Bernasconi further discloses wherein the control logic can execute an operation which involves modifying the captured incoming read/write request cycle (with respect to this limitation, Bernasconi discloses a method comprising the steps of supplying the corrected software to the embedded DSP after the step of providing a branch op code followed by a branch address to the embedded DSP, and supplying data to the

**embedded DSP from a portion of the embedded ROM located downstream of the flawed portion thereof after the step of supplying corrected software to the embedded DSP (see col. 3, lines 32-53). Therefore, the current DSP program address is corrected from old to new. When something is corrected, it also modified. Therefore, this limitation is inherently met).**

32. As per **claims 6, 14, and 26**, the combination of Bernasconi and Ivanov discloses “the system of claim 1,”[see rejection to claim 1 above], Bernasconi further discloses wherein the control logic can execute an operation which causes a timed delay or a conditional delay to be inserted (in col. 13, lines 56-58, Bernasconi discloses a sequencer discloses in the path module, which is known in the art to “sorts data or programs into a predetermined sequence”. Bernasconi discloses this sequencer to create a delay, as disclosed).

33. As per **claims 7, 15, and 21**, Bernasconi discloses, capturing an incoming read/write request cycle (the DSP program address, as discloses in col. 9, line 54) from an upstream device (directionally, fig. 1 shows the DSP program address coming from the DSP 16); loading information from the captured request cycle into a first register (see fig. 3 and col. 7, lines 50-55); comparing the information stored in the first register with one or more trigger conditions (see fig. 3, which discloses the comparator 42 of the patching circuitry 22, as discloses in col. 7, lines 16-19. Col. 9, lines 51-57, teaches that the trigger-matching logic is the logic that doest the matching between the current DSP program address and a break address correspond to a flawed DSP program stored in the ROM 18, such as at section 18b); selecting a sequence of instructions based on a matched trigger condition, and executing

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the selected instructions sequentially (see col. 9, line 57 to col. 10, line 5) to modify the captured incoming read/write request cycle prior to transmission to a downstream destination device (directionally, fig. 1 shows the DSP program address going to the DSP 16. Col. 8, lines 3-11 discloses “When the patch control module 60 is enabled over line 64, and the comparator 42 detects a match, the signal indicating a match over line 62 causes the patch control module 60 to initiate a patch sequence. Initiation of a patch sequence will render appropriate signals over the patch control outputs labelled patch.cycle 1 on line 74 and patch.cycle 2 on line 76. Details of patch sequence initiation will be discussed later with respect to device operation”. This ‘Operation’, as sated in col. 9, line 57 to col. 10, line 5, discloses “At this stage, the patching circuitry 22 sends to the DSP 16 a branch op code followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b thereof. Therefore, in the third general phase of device operation, the DSP 16 fetches corrected DSP program software instructions from the RAM 20 such as section 20b thereof. Moreover, corrected DSP program software can be set up to cause the DSP 16 to establish new break and branch addresses, thereby setting up additional patches to be executed during the operation of the device's DSP 16. Also, a section of corrected DSP program software typically includes, at the end thereof, jumping instructions causing the DSP 16 to recommence fetching DSP program software from the ROM 18 in a section such as 18c located downstream of the previous flawed portion 18b in the ROM 18”),

but fails to disclose expressly wherein the upstream device is different from the downstream destination device.

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Ivanov discloses wherein the upstream device (**Client 108 of fig. 2, as discloses in para. 0033**) is different from the downstream destination device (**Distribution 102 of fig. 2**) (see para. 0033, which discloses **“If the bit pattern of the binary signature is found in a binary file 208, scan-patch module 204 operates to fix the security vulnerability in the binary file 208 by installing a corresponding security patch on client computer 108”**).

Bernasconi et al. (US pat. 6,158,018) and Ivanov et al. (US pat. 2005/0015760) are analogous art because they are from the same field of data patching.

at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as described by Bernasconi and a systems and methods that enable patching of security vulnerabilities in binary files as taught by Ivanov.

The motivation for doing so would have been because Ivanov teaches that (**“The detection and patching of vulnerable binary files is automatic, reliable, regression free, and comprehensive across networks on an unlimited scale. These advantages can be realized in various ways including, for example, by leveraging current anti-virus infrastructure that is widely deployed across the Internet. A divergence of security patches away from conventional service packs provides for the possibility of production of regression-free fixes for security vulnerabilities in binary files”**; see para. 0020).

Therefore, it would have been obvious to combine Ivanov et al. (US pat. 2005/0015760) with Bernasconi et al. (US pat. 6,158,018) for the benefit of creating the method to obtain the invention as specified in claims 7, 15, and 21.

34. As per **claim 8**, the combination of Bernasconi and Ivanov discloses “the method of claim 7,”[see rejection to claim 7 above], Bernasconi further discloses the incoming read/write request cycle is received within an I/O controller chip (see fig. 1 and col. 4, lines 44-48).

35. As per **claim 9**, the combination of Bernasconi and Ivanov discloses “the method of claim 7,”[see rejection to claim 7 above], Bernasconi further discloses executing of the instructions comprises: logically combining a selected operand entry with a selected register containing information captured from the received read/write request cycle (see fig. 3, and col. 3, lines 29-32).

36. As per **claims 11-13 and 23-25**, the combination of Bernasconi and Ivanov discloses “the method of claim 7,”[see rejection to claim 7 above], Bernasconi further discloses wherein executing the instructions comprises: modifying a cycle type section of the incoming read/write request cycle, an address section of the incoming cycle, and a data section of the incoming read/write request cycle (**with respect to this limitation, Bernasconi discloses a method comprising the steps of supplying the corrected software to the embedded DSP after the step of providing a branch op code followed by a branch address to the embedded DSP, and supplying data to the embedded DSP from a portion of the embedded ROM located downstream of the flawed portion thereof after the step of supplying corrected software to the embedded DSP (see col. 3, lines 32-53). Therefore, the current DSP program address is corrected from old to new. When something is corrected, it also modified. Therefore, this limitation is inherently met. Also, a cycle type section of the incoming cycle consists an address section of the incoming cycle, which is a form of data).**

37. As per **claim 16**, the combination of Bernasconi and Ivanov discloses “the patch module of claim 15,”[see rejection to claim 15 above], Bernasconi further discloses wherein the patch module (**the patching circuitry 22, fig. 1**) is embedded within an I/O controller chip (**see fig. 1 and col. 4, lines 44-48**) and can be programmed by a user to workaround conditions and defects existing in the I/O controller chip (**see col. 10, lines 55-60**).

38. As per **claim 17**, the combination of Bernasconi and Ivanov discloses “the patch module of claim 15,”[see rejection to claim 15 above], Bernasconi further discloses wherein the instruction execution unit can execute an instruction that comprises: a first field to specify a type of operation to be performed (**col. 2, line 63 to col. 3 line 17**), wherein the type of operations identified by the first field includes (1) timed delay operation, (2) conditional delay operation, (3) generating new cycle operation, and (4) modifying the capture request cycle operation (**see col. 2, line 63 to col. 3 line 17**); and a second field to specify whether or not a cycle generated by the instruction is to be forwarded to downstream bus (**see col. 3 lines 32-54**).

39. As per **claim 18**, the combination of Bernasconi and Ivanov discloses “the patch module of claim 15,”[see rejection to claim 15 above], Bernasconi further discloses a third field to select a register to modify (**col. 12, lines 43-47**); a fourth field to select an operand entry from an operand array (**col. 12, lines 44-55**); and a fifth field to select a logic gate for combining the selected register with the selected operand entry (**col. 12, lines 47-64**).

40. As per **claim 19**, the combination of Bernasconi and Ivanov discloses “the patch module of claim 17,”[see rejection to claim 17 above], Bernasconi further discloses wherein the

captured incoming cycle is a non-posted cycle (see request 24 in fig. 1, which is an incoming request that has not been process or complete. The applicant discloses that “non-posted cycle” is request that require completion).

**Claim Rejections - 35 USC § 103**

41. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

42. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bernasconi et al. (US pat. 6,158,018) in view of Ivanov et al. (US pat. 2005/0015760), as applied to claim 19, and further in view of Hagan et al. (US pat. 5,966,547).

43. As per **claim 20**, the combination of Bernasconi and Ivanov discloses “the patch module of claim 17,”[see rejection to claim 17 above], Bernasconi further discloses “wherein the instruction execution unit (**the patch control 60 of the patching circuitry 22, as discloses in col. 7, lines 44 and 45- see also col. 8, lines 4-7**) can execute an instruction that comprises; a fifth field (**a fifth step**) to specify whether to load unmodified header information (**the fault address of the DSP program**) from the captured non-posted cycle (**faulty DSP program**) or loaded with modified header information (**the corrected address of the DSP program**) associated with modified request cycle (**corrected DSP program**) that is generated by the control logic (see col. 9, lines 51-57); and a sixth field to specify whether or not a completion associated with the capture request cycle is to be discarded (see col. 9, line 57 to col. 10, line 5).

Bernasconi's and Ivanov fail to specifically disclose a RAM or ROM wherein a completion queue is to be loaded with modified header information associated with modified request cycle that is generated by the control logic"

Hagan discloses "a RAM or ROM wherein a completion queue is to be loaded with modified header information associated with modified request cycle that is generated by the control logic" (see **abst. and col. 4, lines 47-59**).

Bernasconi et al. (US pat. 6,158,018), Ivanov et al. (US pat. 2005/0015760) and Hagan et al. (US pat. 5,966,547) are analogous art because they are from the same field of endeavor storing data into queue from a processor.

In view of such teaching, at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as described by Bernasconi, a systems and methods that enable patching of security vulnerabilities in binary files as taught by Ivanov, and a method and apparatus for efficiently posting entries to a shared queue within the data processing system as taught by Hagan.

The motivation for doing so would have been because Hagan teaches that [**"The significant instructions generally translate into increased processing time, slowing the response of the processor determining whether the current queue entry is empty. Therefore, it would be advantageous to have an improvement with an apparatus for reducing the processing overhead for multiple processor or embedded processor architectures in posting events or tasks to a queue"**(col. 1, lines 49-56)].



Therefore, it would have been obvious to combine Hagan with Bernasconi and Ivanov for the benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claim 20.

#### **IV. RELEVANT ART CITED BY THE EXAMINER**

44. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those arts considered reasonably pertinent to applicant's disclosure. See MPEP 707.05(c).

45. The following references teach a computer system used to detect, transfer data, workaround defects and conditions existing in an integrated circuit chip.

#### **U.S. PATENT NUMBER**

US 6,701,480

US 6,891,765

US 2006/0136514

US 2003/0196096

#### **V. CLOSING COMMENTS**

##### **Conclusion**

##### **a. STATUS OF CLAIMS IN THE APPLICATION**

46. The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

##### **a(1) CLAIMS REJECTED IN THE APPLICATION**

47. Per the instant office action, claims 1-26 have received a final action on the merits.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**b. DIRECTION OF FUTURE CORRESPONDENCES**

48. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is (571) 272-8596. The examiner can normally be reached on Monday to Friday 9:00 AM to 5:00 PM.

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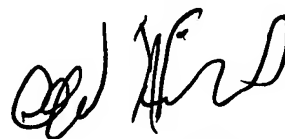
**IMPORTANT NOTE**

49. If attempts to reach the above noted Examiner by telephone is unsuccessful, the Examiner's supervisor, Mr. Alford Kindred, can be reached at the following telephone number: Area Code (571) 272-4037.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 13, 2007

Ernest Unelus  
Examiner  
Art Unit 2181

A handwritten signature in black ink, appearing to read 'Alford Kindred', is written over the printed name.

ALFORD KINDRED  
PRIMARY EXAMINER